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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,293	08/24/2007	Wolfgang Kraemer	8949-91931	8896

22242 7590 01/12/2011
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EXAMINER

FORD, JOHN K

ART UNIT	PAPER NUMBER
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3784

MAIL DATE	DELIVERY MODE
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01/12/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/597,293	KRAEMER ET AL.	
	Examiner	Art Unit	
	John K. Ford	3784	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/16/10</u> . | 6) <input type="checkbox"/> Other: _____ |

Applicant's response of 10 November 2010 has been studied carefully. New claims 16-18 have been submitted. New claim 16 appears to correspond to an amalgam of cancelled claims 8-12. New claim 17 appears to correspond to cancelled claim 14. New claim 18 appears to correspond to cancelled claim 15.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 17 and 18 each depend from cancelled claim 8. It is unclear whether they are supposed to each depend directly from claim 16 or one from the other (i.e. should claim 17 depend from claim 16 and claim 18 depend from claim 17 or should claim 18 depend from claim 16 and claim 17 depend from claim 18).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 16 is rejected under 35 U.S.C. 103(a) as obvious over the combined teachings of Rafalovich (6,059,016) and Horn et al (US 2003/0192952).

In Figure 32, Rafalovich discloses an electrically driven compressor 488 (col. 32, line 42), condenser 490, expansion device 492, a thermal storage system 512 having a latent heat holdover 391 (phase change material) and a coolant circuit formed by heat exchanger 166, air heat exchangers 514 and 516, closed heat transfer loop 156 and a pump 150. While element 492 is referred to as an expansion device and not specifically an expansion valve, the terms are often used synonymously. If necessary, Rafalovich discloses an expansion valve 136 in the embodiment of Figure 5 and it would have been obvious to have used an expansion valve in the Figure 32 embodiment to perform the expansion of the refrigerant. Many such expansion valves offer the advantage of improved control over the refrigerant expansion.

To have added a fuel fired heater (as taught by Horn '952 at 26) downstream of the heat exchanger 514 and/or 516 of Rafalovich would have been obvious to one of

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ordinary skill in that art to advantageously allow for inexpensive heating of the compartment when the vehicle was parked in the winter months.

Alternatively, to have powered compressor 42 of Horn '952 electrically would have been obvious in view of the teaching of Rafalovich which discloses an electrically driven compressor 488 (col. 32, line 42). Such a modification would advantageously allow the compressor to be powered by battery power such as exists in many hybrid or all electric vehicles.

Applicant's remark that a heater downstream of a cooler can be used for reheating chilled and dehumidified air does not change the fact that the heater can also be used for heating the vehicle in the winter. The patentability of the apparatus claimed rests in the apparatus itself not the manner in which it is used. See MPEP 2114, incorporated here by reference.

Claim 16 is rejected under 35 U.S.C. 103(a) as obvious over the combined teachings of the combined teachings of Khelifa et al (6,260,376) and Horn et al (US 2003/0192952).

The detailed description of Figures 1-3 of Khelifa '376 appears to show all of the claimed subject matter of claim 16 and Khelifa '376 is incorporated here by reference by

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way of explanation. Given that it shares an inventor with the inventive entity of the current application, no further explanation by this examiner is deemed necessary.

To have added a fuel fired heater (as taught by Horn at 26) downstream of the heat exchanger 21 of Khelifa '376 would have been obvious to one of ordinary skill in that art to advantageously allow for inexpensive heating of the compartment when the vehicle was parked in the winter months.

Alternatively, to have powered compressor 42 of Horn '952 electrically would have been obvious in view of the teaching of Khelifa '376 which discloses an electrically driven compressor in column 3, lines 31-43, incorporated here by reference. Such a modification would advantageously allow the compressor to be powered by battery power such as exists in many hybrid or all electric vehicles.

Applicant's remark that a heater downstream of a cooler can be used for reheating chilled and dehumidified air does not change the fact that the heater can also be used for heating the vehicle in the winter. The patentability of the apparatus claimed rests in the apparatus itself not the manner in which it is used. See MPEP 2114, incorporated here by reference.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rafalovich '016/Horn '952 or Khelifa '376/Horn '952 as applied to claim 16 above and further in view of Kanada (5,957,193) or Carr (5,277,038).

While no details of the arrangement of the phase change materials in Rafalovich (6,059,016) in Figure 31 or Figure 32 or Khelifa et al (6,260,376) are shown, it is known from either one of Kanada (5,957,193) or Carr (5,277,038) to have used a plurality of containers to contain the heat storage material. See the plurality of containers shown in Figures 9-20D of Kanada and see Figure 1A of Carr, containers 83, 85 and 87.

To have provided the system of Rafalovich '016/Horn '952 or Khelifa '376/Horn '952 with multiple containers of phase change material as taught by either of Kanada (5,957,193) or Carr (5,277,038) to advantageously permit the use of salt hydrates and other phase change materials and assure improved distribution of heat without necessarily resorting to agitation would have been obvious to one of ordinary skill in the art.

Regarding comments in the November 10, 2010 response that the latent cold storages can be located at various areas and/or cool separate areas in the vehicle, claim 17 contains no such limitation.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rafalovich '016/Horn '952 as applied to claim 16 above, and further in view of Tanaka (USP 5,644,929) or Rafalovich et al (USP 5,871,041).

To have substituted a phase change storage heat exchanger having air passed through it and having a plurality of heat storage elements as taught by Tanaka (Figure 5) or Rafalovich '041 (Figures 3-4) or Rafalovich '016 (Figure 6 and 7) for that shown in Rafalovich '016, Figure 31 at 484, would have been obvious to one of ordinary skill in the art.

Note that Figure 31 of Rafalovich '016 which is identical to Figure 32 of Rafalovich '016 except that air is directly passed over the heat storage material by fan 400. To have passed the air through plural containers having heat storage material in them as taught by Tanaka (Figure 5) or Rafalovich '041 (Figures 3-4) or Rafalovich '016 (Figure 6 and 7) would have been obvious to one of ordinary skill in the art to advantageously increase the surface area for heat transfer with the air.

Regarding comments in the November 10, 2010 response that the latent cold storages can be located at various areas and/or cool separate areas in the vehicle, claim 17 contains no such limitation.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rafalovich '016/Horn '952 or Khelifa '376/Horn '952 as applied to claim 16 above, and further in view of Kang (WO 01/40005).

In column 35, lines 13-16, Rafalovich discloses that the embodiment of Figure 32 (among others) can be used in an electric vehicle or a hybrid electric vehicle and this also appears to be true of Khelifa. None of Rafalovich, Khelifa or Horn discloses the conventional details of such vehicles such as an engine driven generator. On page 8, lines 9-17, Kang discloses that electrically powered air conditioning systems using an electrically powered compressor (such as disclosed by Rafalovich and Khelifa) can be powered by an engine driven generator 17 that is directly connected to and driven by a crankshaft of an engine (not shown) of the vehicle.

To have driven the electrically driven compressor of Rafalovich/Horn or the electrically driven compressor (see claim 7 of Khelifa) of Khelifa/Horn, by an engine driven generator 17 that is directly connected to and driven by a crankshaft of an engine (not shown) of the vehicle, in a hybrid electric vehicle installation (as contemplated in column 35, lines 13-16 of Rafalovich) would have been obvious to one of ordinary skill in the art since this appears to be conventional and is clearly taught by Kang. Such a modification would advantageously permit optimal use of battery and engine resources in a hybrid vehicle.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John K. Ford whose telephone number is 571-272-4911. The examiner can normally be reached on Mon.-Fri. 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John K. Ford/
Primary Examiner, Art Unit 3784

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